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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,310	02/26/2004	Kazumi Furuta	04115/HG	9200

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EXAMINER

WOLLSCHLAGER, JEFFREY MICHAEL

ART UNIT PAPER NUMBER

1732

DATE MAILED: 07/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/789,310

Applicant(s)

FURUTA ET AL.

Examiner

Jeff Wollschlager

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 14-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election of claims 1-13 in the reply filed on June 23, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 14-31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The disclosure is objected to because of the following informalities: The specification contains numerous grammatical errors. A thorough review of the specification and appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Furuta et al. (U.S. Patent Application Publication 2002/0170887; published November 21, 2002).

Regarding claim 1, Furuta et al. teach a method for depicting a predetermined diffraction structure on a substrate by scanning an electron beam onto said substrate comprising: measuring a contour of said substrate so as to detect height errors in surface heights in comparison with specified values of a surface height distribution of said substrate; adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors corresponding to each of said diffraction gratings; and depicting each of said diffraction gratings by scanning said electron beam onto said substrate, according to said depicting mode adjusted in said

adjusting step (Abstract, Figure 5, paragraphs [0001, 0027-0029, 0088, 0089, 0093, 0104, 0109]).

Alternatively, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to use the method taught by Furuta et al. to compare the measured height data with specified values of a surface height distribution to provide the required diffraction structure on the substrate.

As to claim 2, Furuta et al. disclose the depicting mode represents spacing between the diffraction gratings (paragraphs [0193, 222, 225, 281, 291, 362, 445, 448]).

As to claims 3 and 5, Furuta et al. teach making the required adjustments based upon the height variation of the substrate (Figure 5, paragraph [0291]). As the available adjustments are limited (larger, smaller, closer, farther) the adjustments can be clearly envisaged. Alternatively, it would clearly be within the skill of one having ordinary skill to make the required adjustments as claimed in view of the teaching of Furuta et al. as is routinely practiced in the art.

As to claim 4, the depicting mode represents a dose of said electron beam for depicting each of said diffraction gratings (paragraphs [0193, 222, 225, 230, 365, 366, 448]).

As to claim 6, Furuta et al. teach various substrates may be employed, including a shaped/carved substrate (Abstract).

As to claim 7, Furuta et al. teach the substrate may additionally have a film applied to the substrate which undergoes the same treatment as previously discussed (paragraph [0196]).

Regarding claim 8, Furuta et al. teach a method for depicting a predetermined diffraction structure on a substrate by scanning an electron beam onto said substrate comprising: measuring a thickness of a resist film formed on said substrate so as to detect thickness errors of said resist film in comparison with specified values of a film thickness distribution of said resist film; adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors corresponding to each of said diffraction gratings; and depicting each of said diffraction gratings by scanning said electron beam onto said resist film, according to said depicting mode adjusted in said adjusting step (Abstract, Figure 5, paragraphs [0001, 0012-0013, 0027-0029, 0088, 0089, 0093, 0104, 0109, 0196]).

Alternatively, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to use the method taught by Furuta et al. to compare the measured film thickness data with specified values of a thickness distribution to provide the required diffraction structure.

As to claim 9, Furuta et al. disclose the depicting mode represents spacing between the diffraction gratings (paragraphs [0193, 222, 225, 281, 291, 362, 445, 448]).

As to claims 10 and 12, Furuta et al. teach making the required adjustments based upon the height variation of the substrate (Figure 5, paragraph [0291]). As the available adjustments are limited (larger, smaller, closer, farther) the adjustments can be clearly envisaged. Alternatively, it would clearly be within the skill of one having

ordinary skill to make the required adjustments as claimed in view of the teaching of Furuta et al. as is routinely practiced in the art.

As to claim 11, the depicting mode represents a dose of said electron beam for depicting each of said diffraction gratings (paragraphs [0193, 222, 225, 230, 365, 366, 448]).

As to claim 13, Furuta et al. teach various substrates may be employed, including a shaped/carved substrate (Abstract).

Claims 1-13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Watanabe et al. (U.S. Patent 6,107,637; issued August 22, 2000).

Regarding claim 1, Watanabe et al. teach a method for depicting a predetermined diffraction structure on a substrate by scanning an electron beam onto said substrate comprising: measuring a contour of said substrate so as to detect height errors in surface heights in comparison with specified values of a surface height distribution of said substrate; adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors corresponding to each of said diffraction gratings; and depicting each of said diffraction gratings by scanning said electron beam onto said substrate, according to said depicting mode adjusted in said

adjusting step (Abstract; col. 1, line 50-col. 2, line 45; col. 10, line 67-col. 11, line 27; col. 19, line 15-30; col. 49, line 55-67).

Alternatively, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to use the measuring and adjusting method taught by Watanabe et al. to practice the method of depicting generically referred to throughout the Watanabe et al. reference (col. 2, line 6-10; col. 10, line 67-col. 11, line 27; col. 19, line 15-30; col. 49, line 55-67).

As to claim 2, Watanabe et al. disclose the depicting mode represents spacing between the diffraction gratings.

As to claims 3 and 5, Watanabe et al. teach adjusting based upon the height variation of the substrate (col. 11, lines 13-37) to provide the patterns without image distortion and with a high resolution (col. 2, line 6-10). As these adjustments can be clearly envisaged, the limitations of the claims are anticipated. Alternatively, it would clearly be within the skill of one having ordinary skill to make adjustments as required to make the distortion free surface taught by Watanabe et al.

As to claim 4, the depicting mode represents a dose of said electron beam for depicting each of said diffraction gratings.

As to claim 6, Watanabe et al. teach various substrates may be employed, including a shaped/carved substrate (Figure 35).

As to claim 7, Watanabe et al. teach the substrate may additionally have a film applied to the substrate which undergoes the same treatment as previously discussed (Figure 12; col. 34, lines 19-55).

Regarding claim 8, Watanabe et al. teach a method for depicting a predetermined diffraction structure on a substrate by scanning an electron beam onto said substrate comprising: measuring a thickness of a resist film formed on said substrate so as to detect thickness errors of said resist film in comparison with specified values of a film thickness distribution of said resist film; adjusting a depicting mode for depicting each of diffraction gratings, which constitute said predetermined diffraction structure, in response to said height errors detected in said measuring step, so as to compensate for a phase change of diffracted light caused by each of said height errors corresponding to each of said diffraction gratings; and depicting each of said diffraction gratings by scanning said electron beam onto said resist film, according to said depicting mode adjusted in said adjusting step (Abstract; col. 1, line 50-col. 2, line 45; col. 10, line 67-col. 11, line 27; col. 19, line 15-30; col. 49, line 55-67; Figure 12, col. 34, lines 19-55).

Alternatively, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to use the method of measuring and adjusting taught by Watanabe et al. to practice the method of depicting generically referred to throughout the Watanabe et al. reference (col. 2, line 6-10; col. 10, line 67-col. 11, line 27; col. 19, line 15-30; col. 49, line 55-67).

As to claim 9, Watanabe et al. disclose the depicting mode/electron beam dose represents spacing between the diffraction gratings

As to claims 10 and 12, Watanabe et al. teach adjusting based upon the height variation of the substrate (col. 11, lines 13-37) to provide the patterns without image

distortion and with a high resolution (col. 2, line 6-10). As these adjustments can be clearly envisaged, the limitations of the claims are anticipated. Alternatively, it would clearly be within the skill of one having ordinary skill to make adjustments as required to make the distortion free surface taught by Watanabe et al.

As to claim 11, the depicting mode represents a dose of said electron beam for depicting each of said diffraction gratings.

As to claim 13, Watanabe et al. teach various substrates may be employed, including a shaped/carved substrate (Figure 35).

Conclusion

All claims are rejected.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Wollschlager whose telephone number is 571-272-8937. The examiner can normally be reached on Monday - Thursday 7:00 - 4:45, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JW

Jeff Wollschlager
Examiner
Art Unit 1732

July 13, 2006


CHRISTINA JOHNSON
PRIMARY EXAMINER
7/11/06